

DR MATHEW MARQUES

THE MISINFORMATION AGE:

CAN YOU BELIEVE IT?

TRUTH
FACTS

FAKE
NEWS

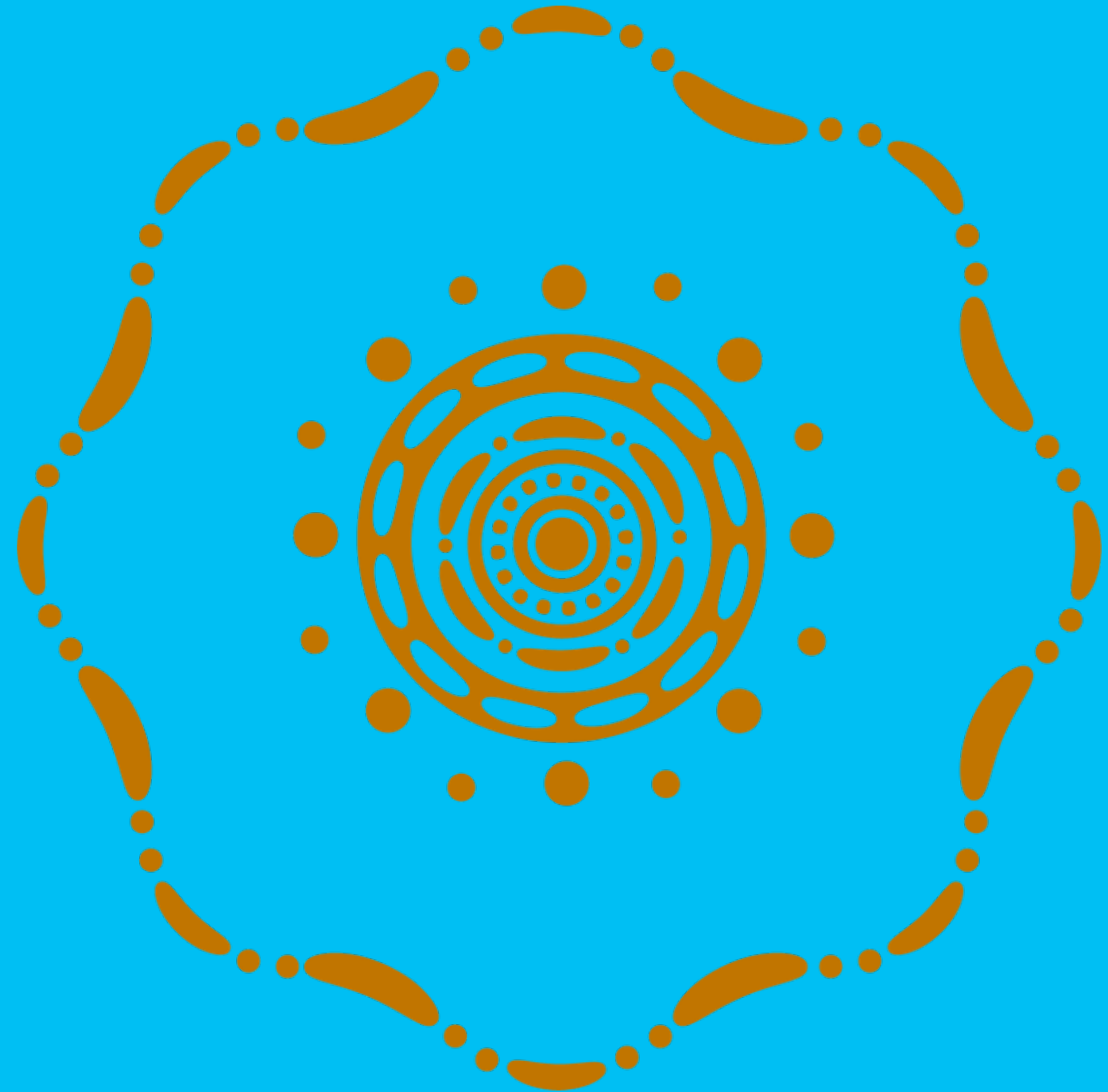


Probus (Carlton/Parkville) Talk
14 April 2026

Photo by [Hartono Creative Studio](#) on [Unsplash](#)

ACKNOWLEDGEMENT OF COUNTRY

- La Trobe University acknowledges our campuses are located on the lands of many Traditional Custodians in Victoria and New South Wales. We recognise their ongoing connection to the land and value their unique contribution to the University and wider Australian society.
- La Trobe University is committed to providing opportunities for Aboriginal and Torres Strait Islander people, both as individuals and communities, through teaching, learning, research and partnerships across all our campuses.



WHAT IS

MISINFORMATION ?





US Secretary of State Colin Powell holds up a vial that he said was the size that could be used to hold anthrax, as he accused Iraq of developing weapons of mass destruction before the United Nations Security Council, on 5 February 2003 (AFP)

MISINFORMATION

- Any information that turns out to be false
- Disinformation: a subset of misinformation that is spread intentionally.
- Science and Health misinfo: Information that is contrary to the epistemic consensus of the scientific community regarding a phenomenon
- e.g., Ukraine is governed by a neo-Nazi regime.
- e.g., vaccines overwhelm a baby's immune system

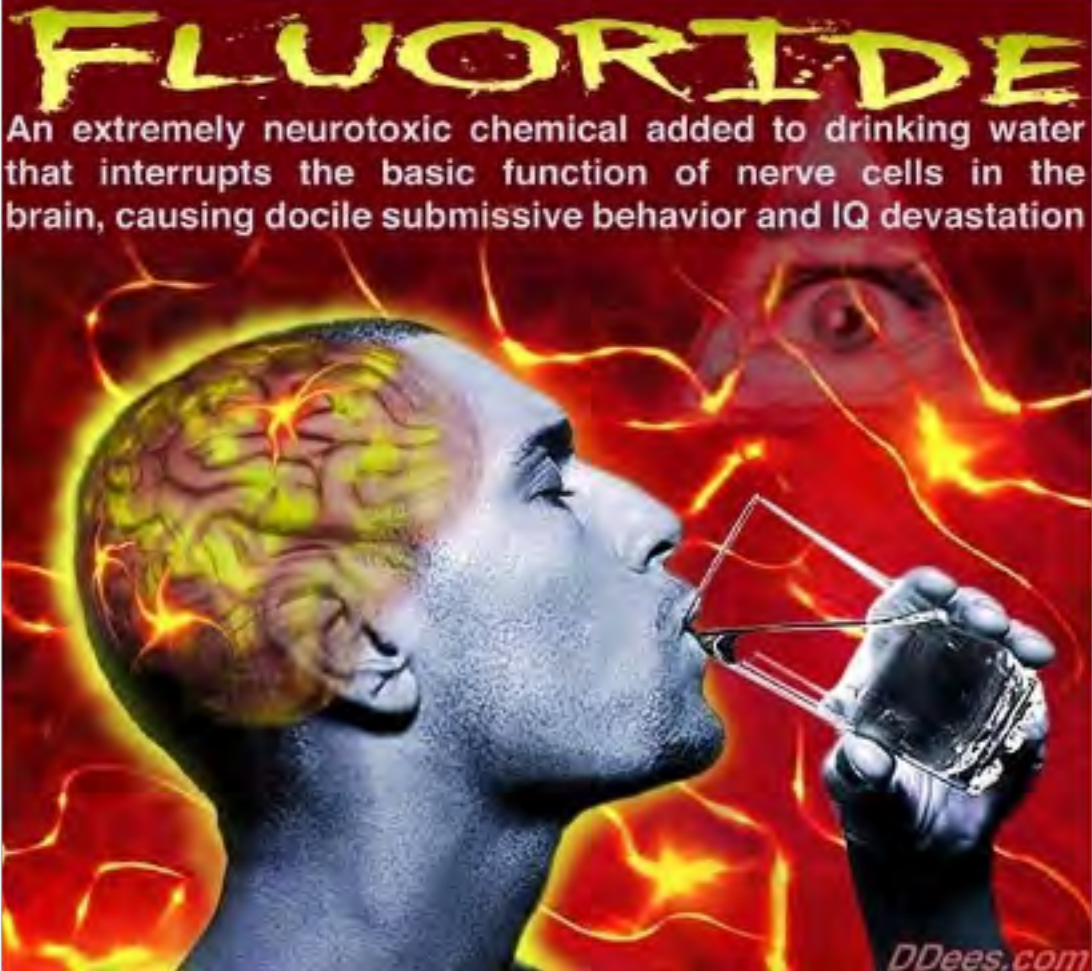


CONSPIRACY THEORIES

- Conspiracy theories are narratives which attribute the cause and/or coverup of an important event or phenomena from the public to a powerful and secretive group of malicious conspirators (Douglas et al., 2019).
- e.g., Lee Harvey Oswald collaborated with the CIA to assassinate JFK
- e.g., Pharmaceutical companies are hiding evidence that vaccinations can cause serious illnesses and disabilities in children
- Protagonists – Who did it?
- An action – What did they do?
- A motive – Why did they do it?

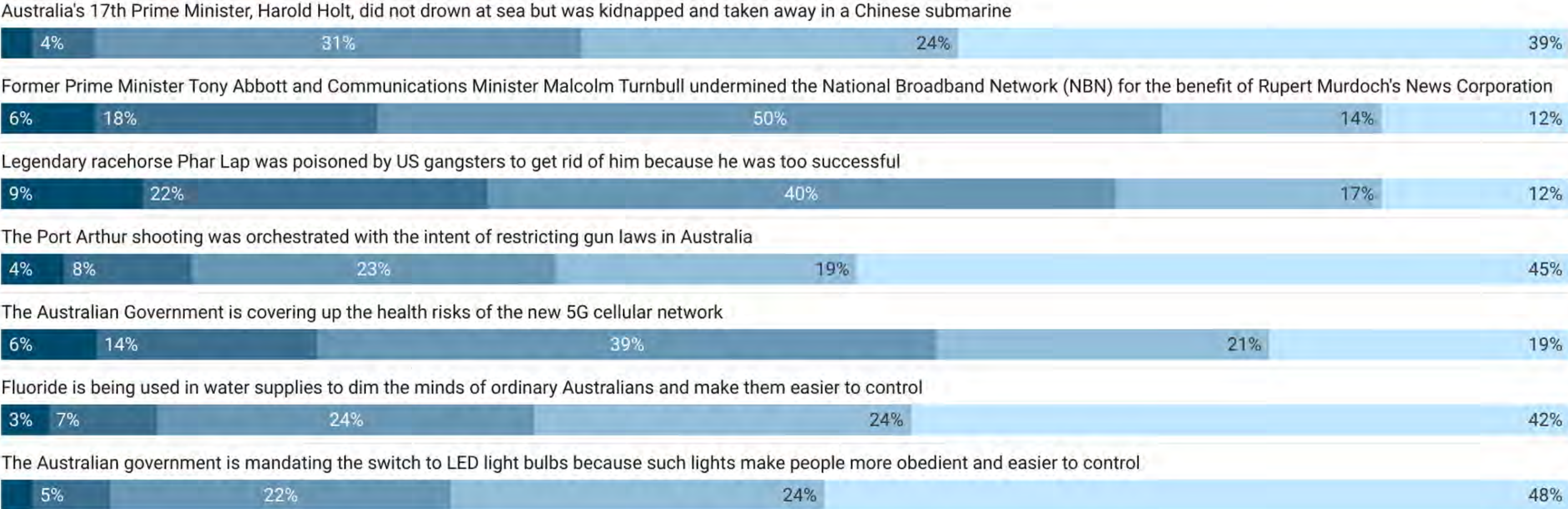


AUSSIE CONSPIRACY THEORIES



Percentage of Australian Agreement with Local Conspiracy Theories

■ Strongly agree
 ■ Agree
 ■ Neither
 ■ Disagree
 ■ Strongly disagree

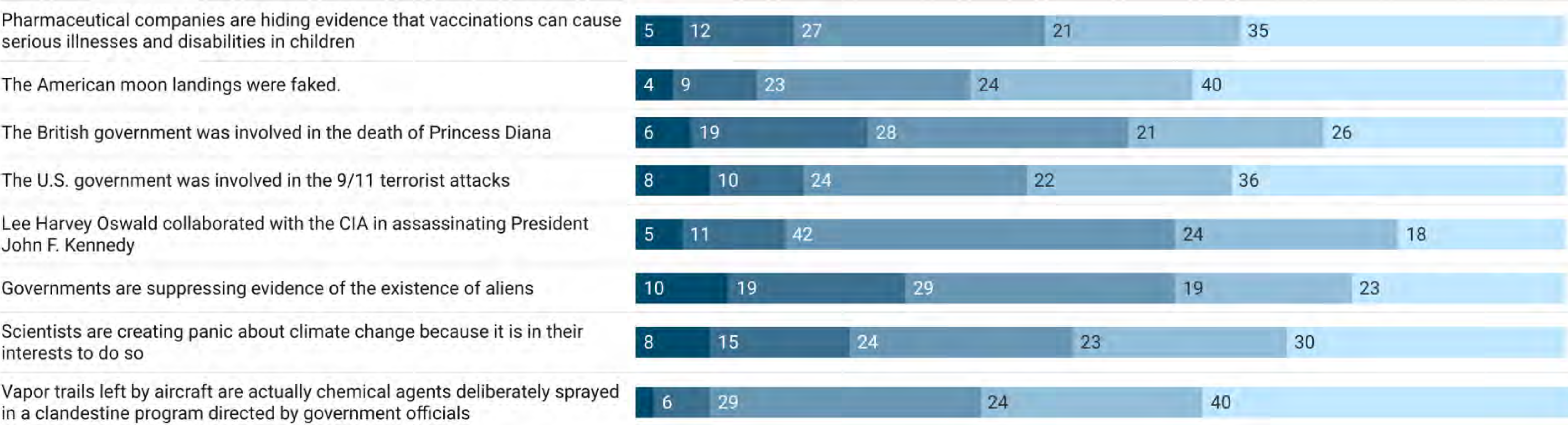


Created with Datawrapper

Marques, M. D., Ling, M., Williams, M. N., Kerr, J. R., & McLennan, J. (2022). Australasian public awareness and belief in conspiracy theories: Motivational correlates. *Political Psychology*, 43(1), 177–198. <https://doi.org/10.1111/pops.12746>

Australian endorsement of International conspiracy theories

■ Strongly agree
 ■ Agree
 ■ Neither
 ■ Disagree
 ■ Strongly disagree



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A MOTIVATIONAL ACCOUNT FOR BELIEF

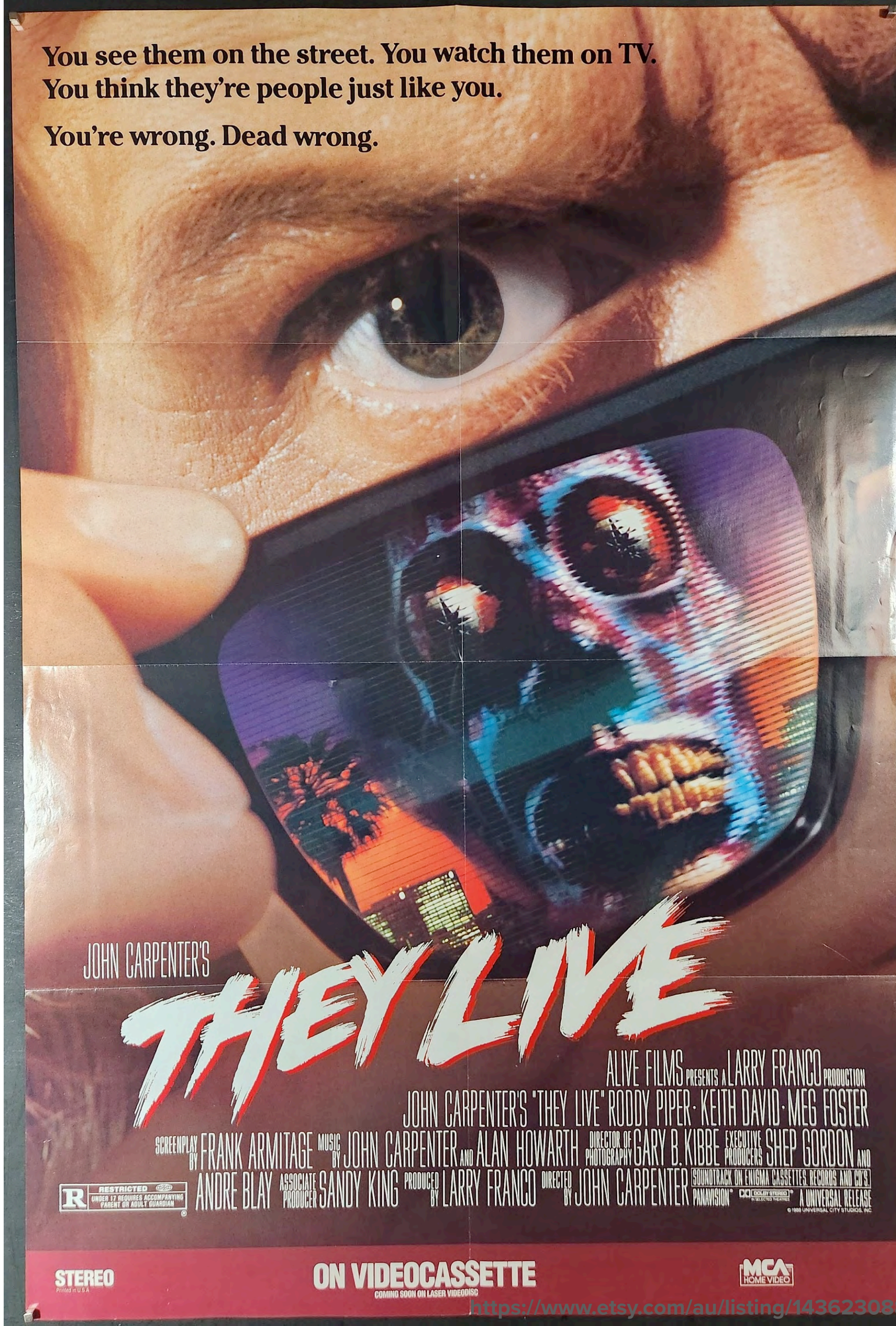
- **Conspiracy beliefs underpin or are associated with fundamental human motivations**
- **Epistemic motive to understand the world and to increase knowledge, certainty, and accuracy**
- **Existential motive to reduce threat and to maintain a safe and stable environment.**
- **Social motive to maintain valued interpersonal relationships and a positive image of the self and ingroup**



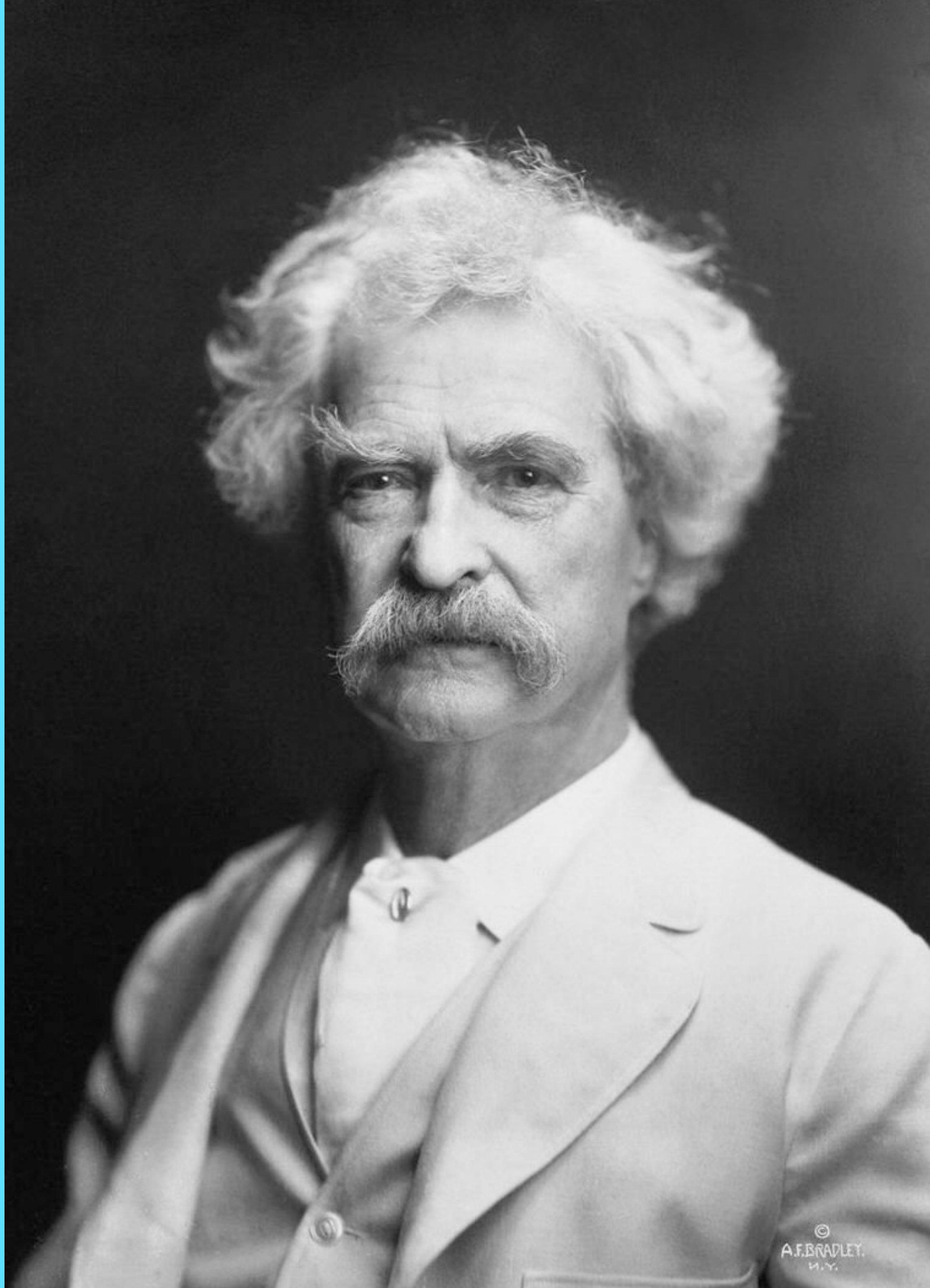


SINCERE BELIEFS

- Public Policy Polling statement in 2013: “Four percent of Americans believe Lizardmen are running the Earth”.
- note: 7% of Americans are “not sure” whether Lizardmen are running the Earth or not.

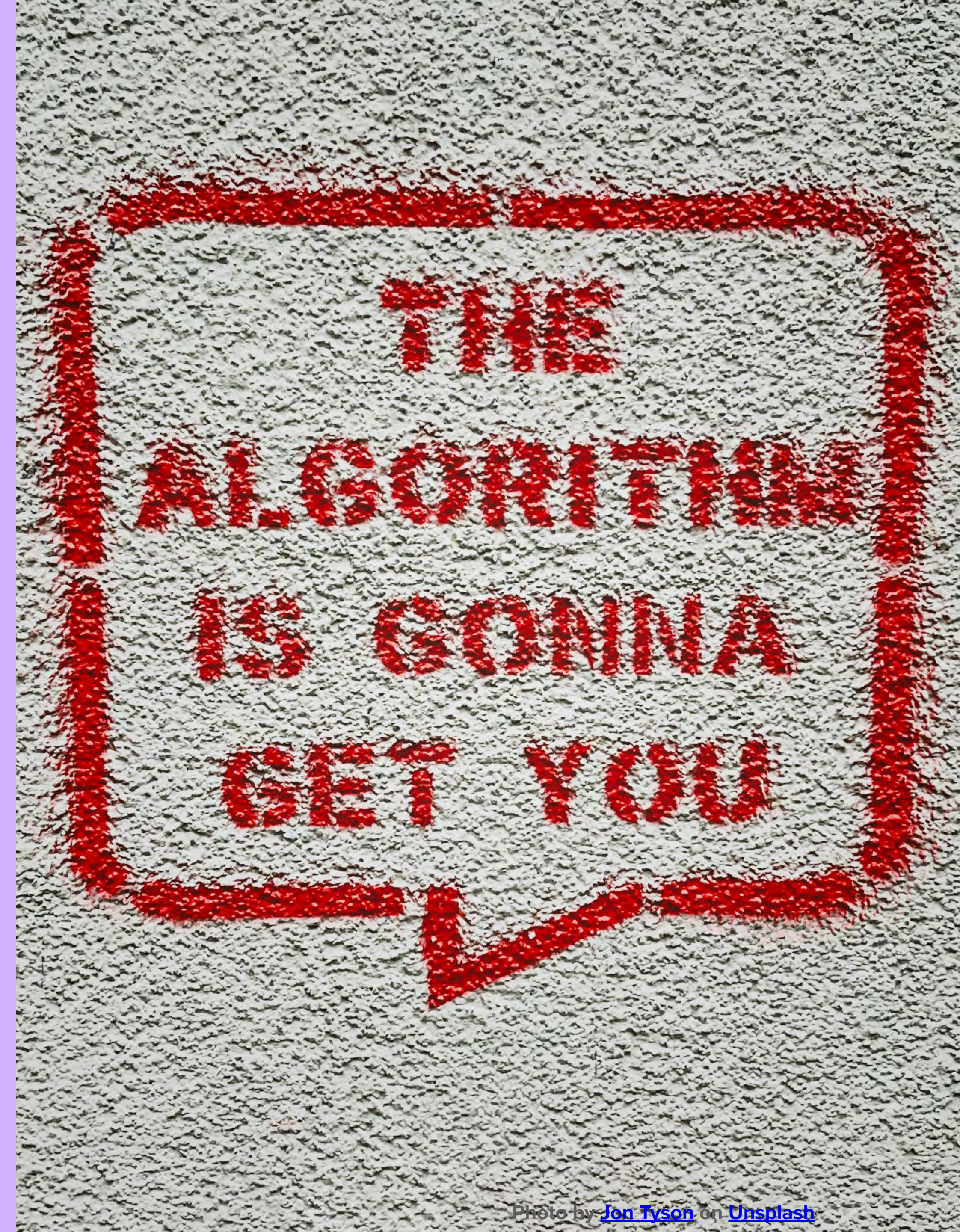


**“A LIE CAN TRAVEL HALFWAY
AROUND THE WORLD WHILE THE
TRUTH IS PUTTING ON ITS SHOES.”**

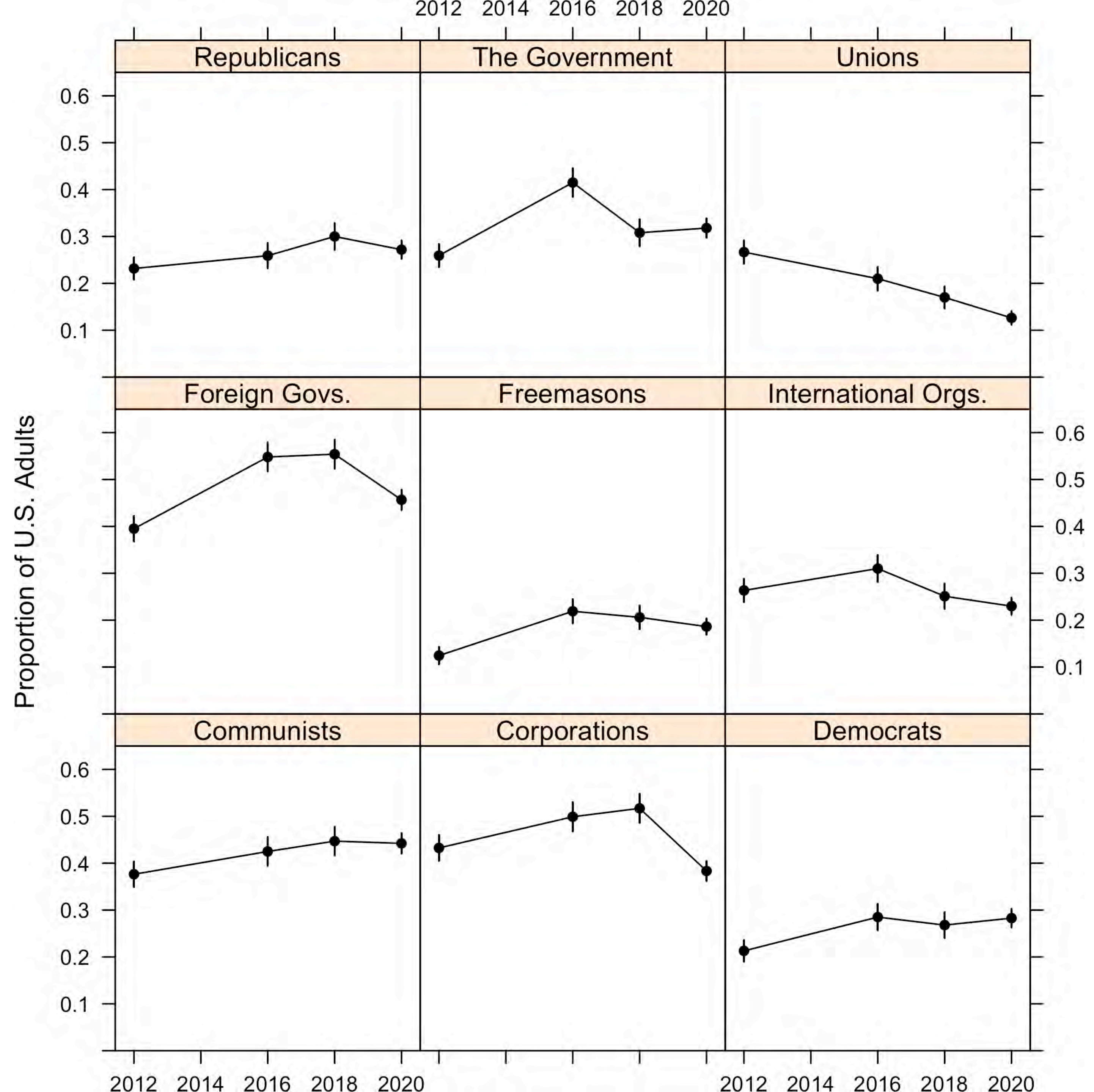


SO WHAT'S CHANGED?

- **Misinformation and conspiracy theories have been ever-present**
- **Evidence does not suggest that the belief in conspiracy theories have increased over time**
- **Volume? Velocity? Veracity?**

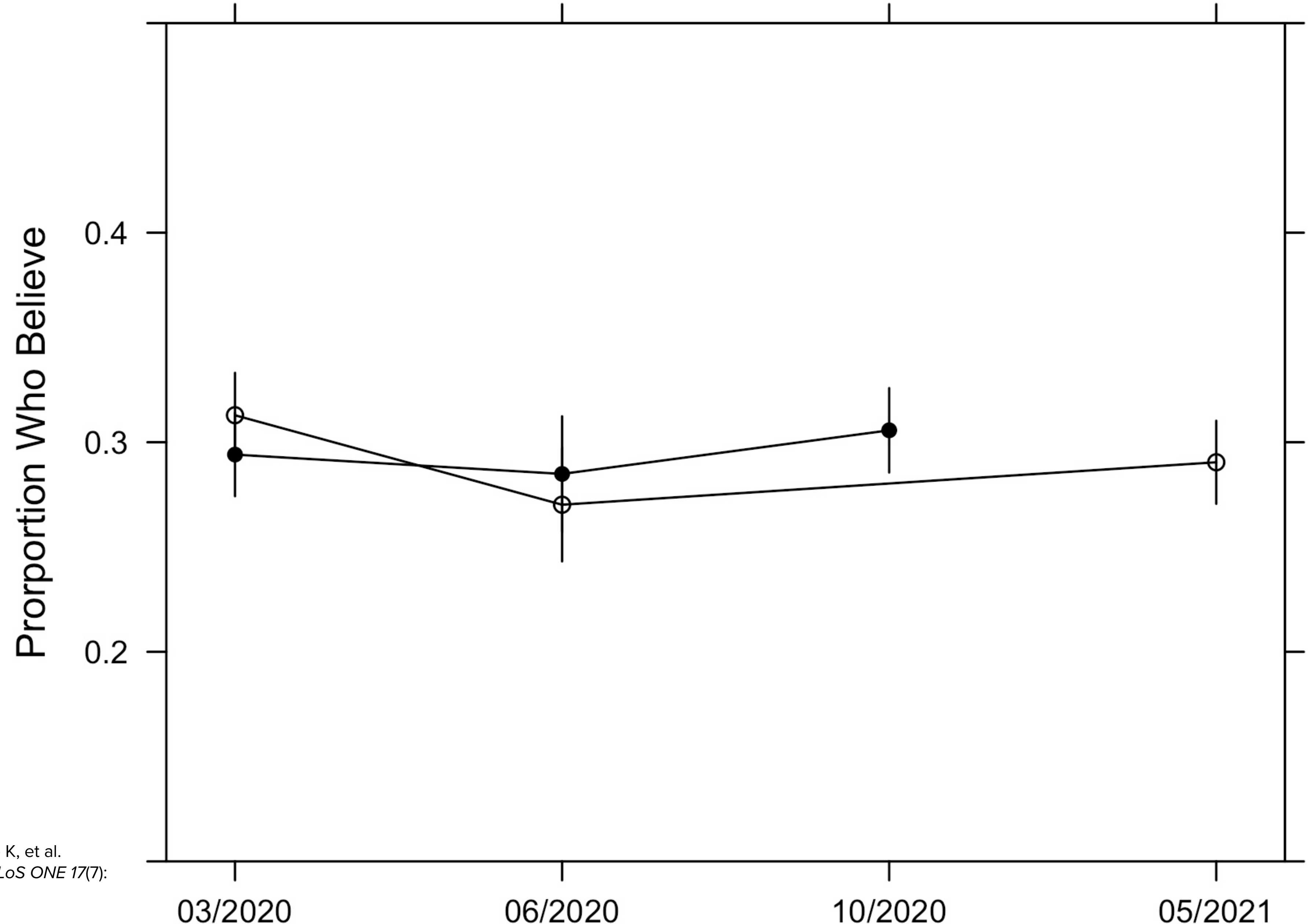


- Proportion of U.S. adults who beliefs that each group is “likely to work in secret against the rest of us” over time.

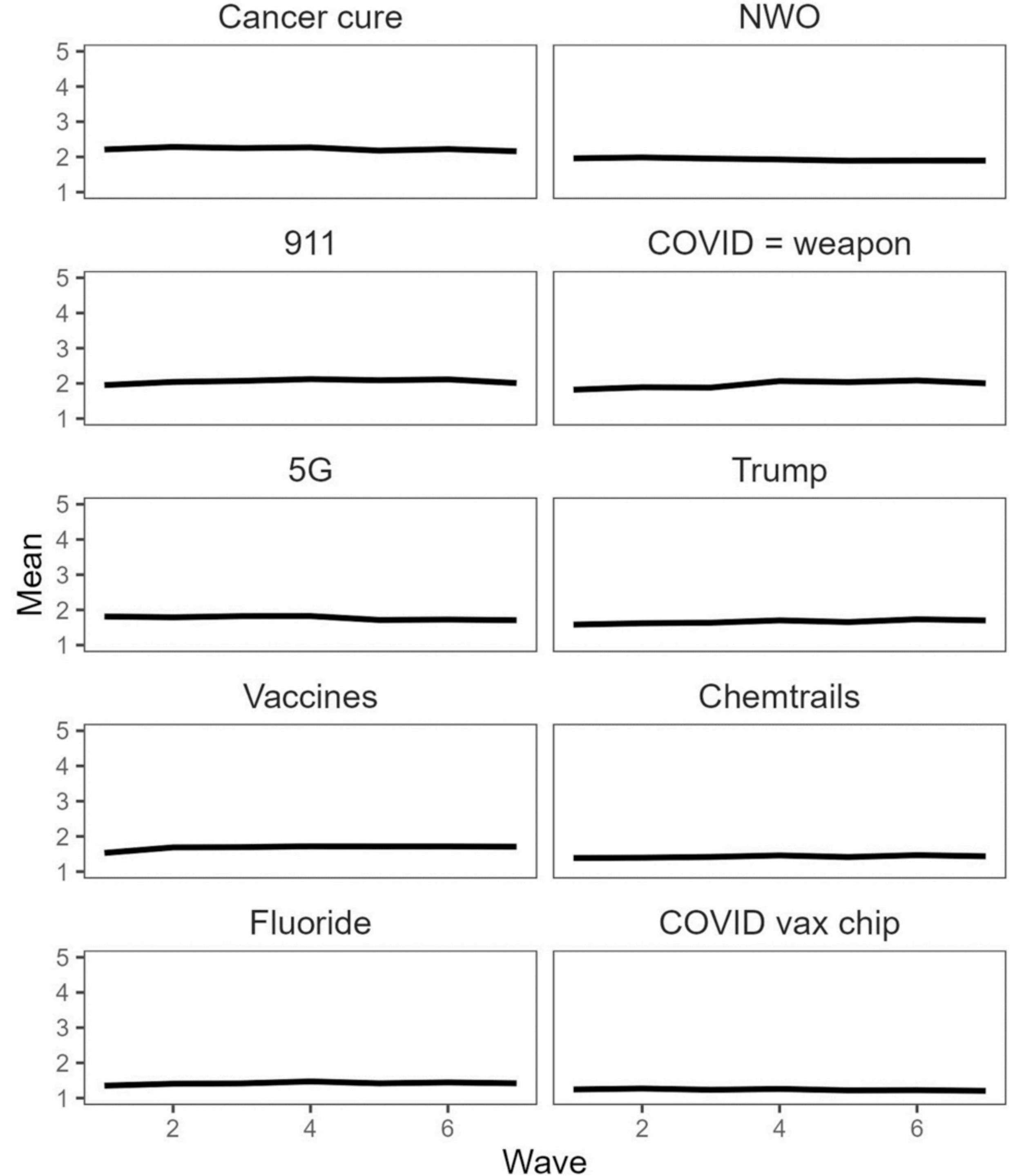


■ Beliefs in COVID-19 conspiracy theories in the U.S.

○ COVID-19 Spread on Purpose
● COVID-19 Threat Exaggerated



- We collected data from 498 Australians and New Zealanders using an online longitudinal survey, with data collected at monthly intervals over 6 months (March to September 2021).



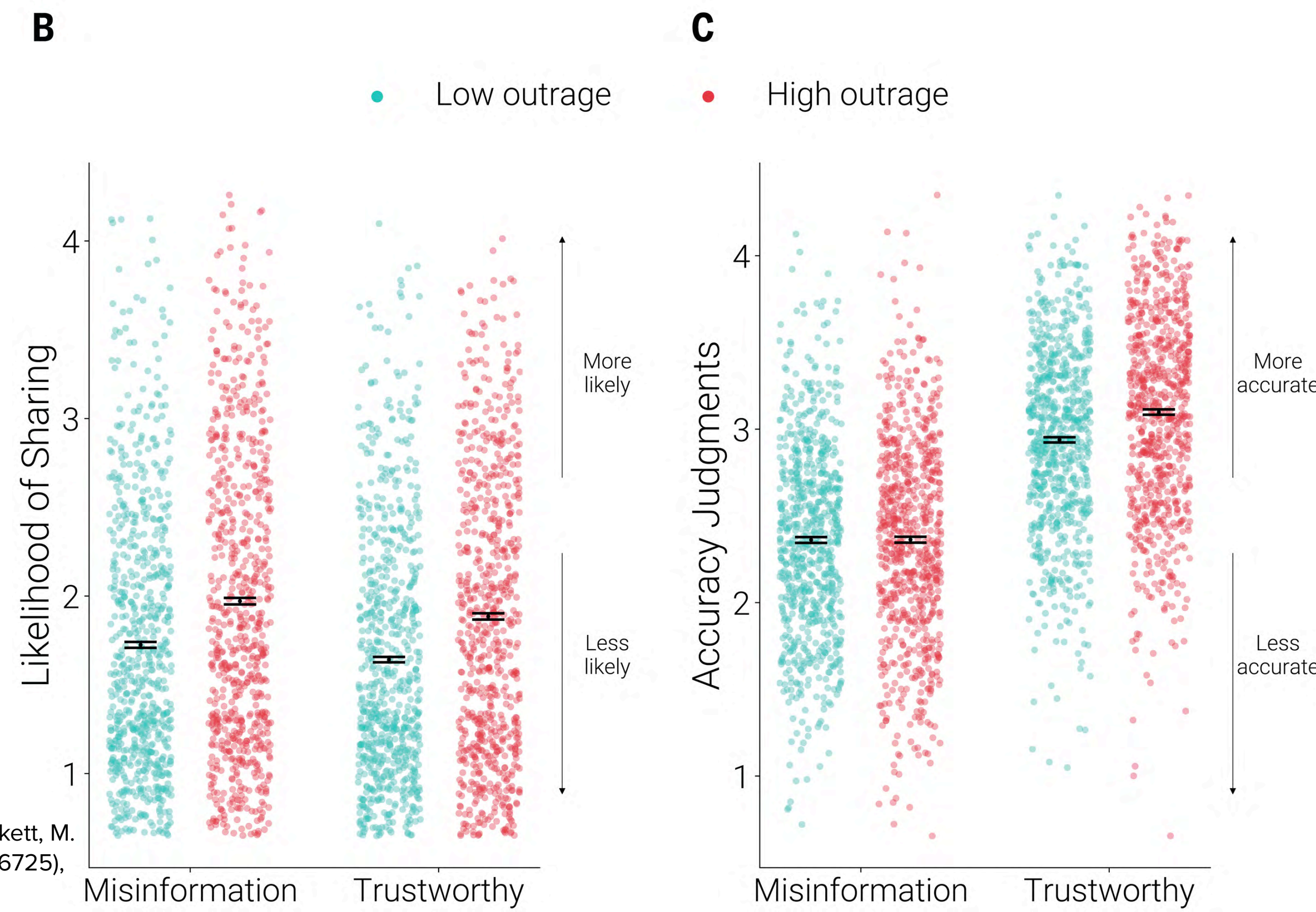
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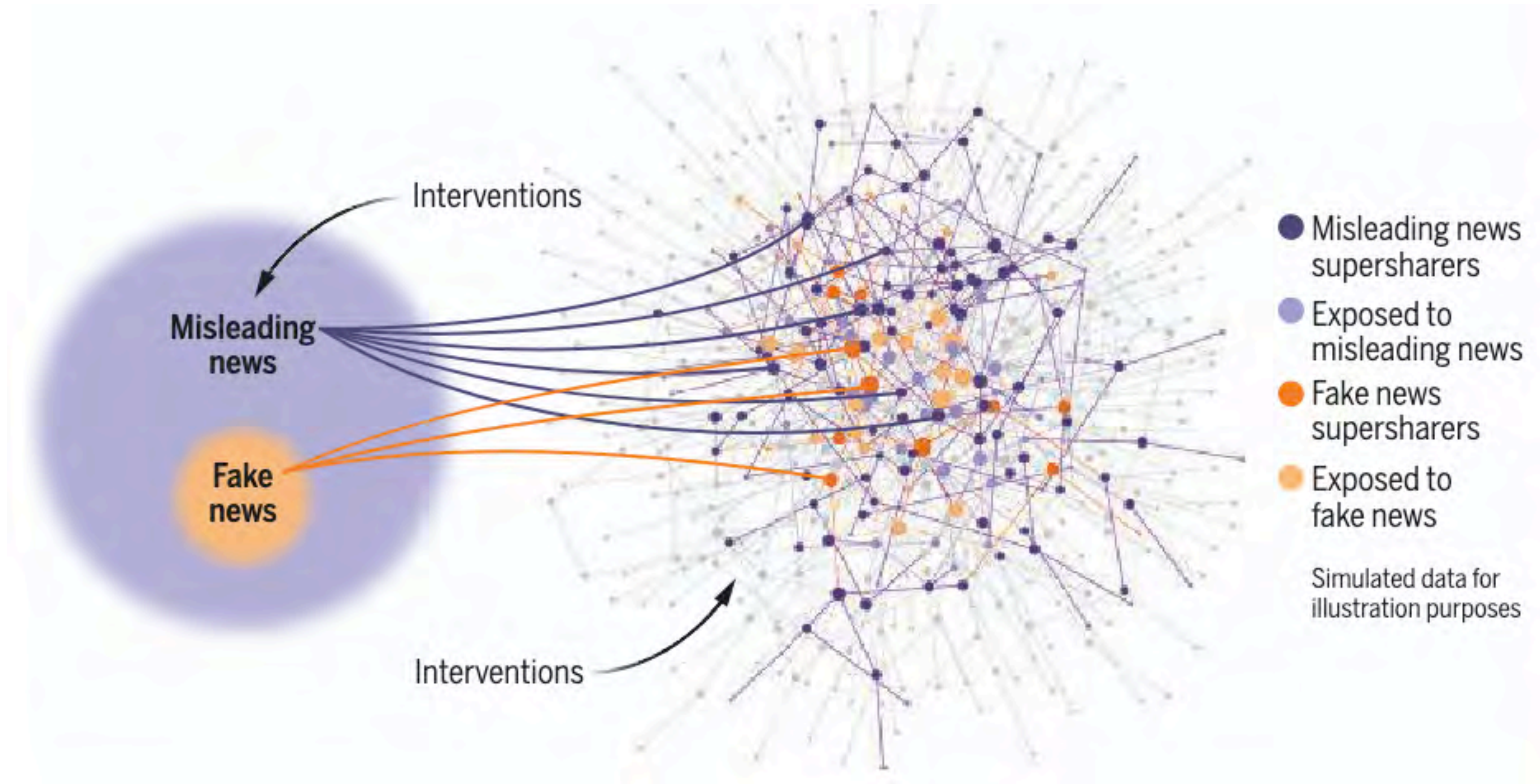


HIGHER OUTRAGE INCREASES SHARING BUT DOES NOT AFFECT ACCURACY DISCERNMENT

- Participants read a series of news headlines that were fact-checked as true or false. The headlines had been pilot tested so that half of those that participants read were outrage-evoking and the other half were not.
- High outrage evocation led to higher willingness to share ratings across misinformation and trustworthy news
- In another study: Outrage increases non-epistemic motives for sharing

McLoughlin, K. L., Brady, W. J., Goolsbee, A., Kaiser, B., Klonick, K., & Crockett, M. J. (2024). Misinformation exploits outrage to spread online. *Science*, 386(6725), 991–996. <https://doi.org/10.1126/science.adl2829>





WHAT CAN BE DONE?

- **Prebunk**
 - <https://www.getbadnews.com/>
 - <https://crankyunclevaccine.org/>
 - <https://prebunking.withgoogle.com/>
- **Narratives techniques**
 - **Useful for refutation grounded in specific facts and explanations of a topic**
- **Manipulation techniques**
 - **Beneficial in being a more apolitical approach and applicable across narratives and cultures**

Step one Emotional Warning

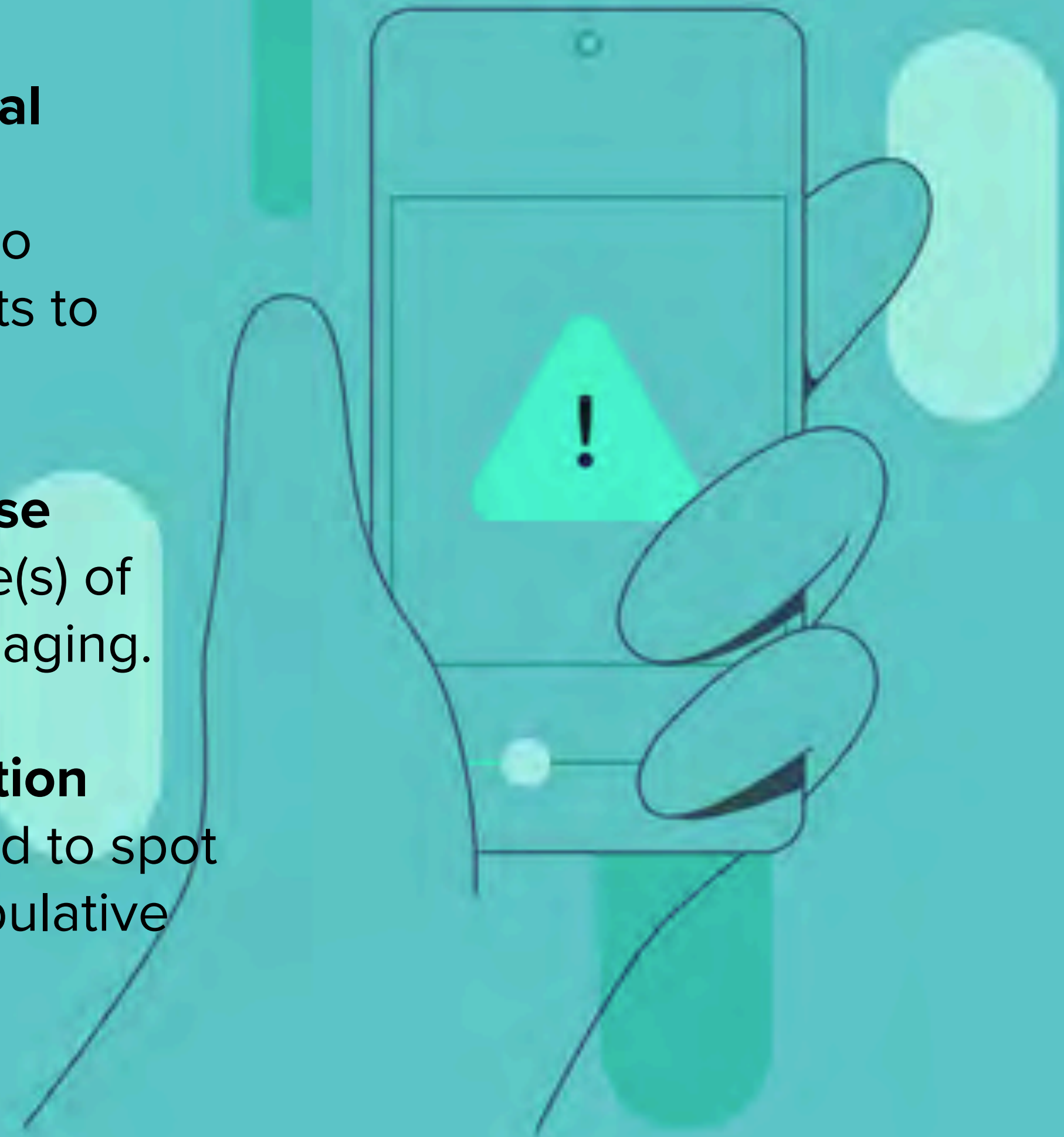
Users are alerted to impending attempts to manipulate them.

Step two Microdose

Users see example(s) of manipulative messaging.

Step three Refutation

Users are equipped to spot and refute a manipulative message.



COMMON MISINFORMATION TECHNIQUES

TECHNIQUE	EXAMPLE
<p>Impersonation</p> <p>Spreading information as another person or organization in order to appear more trustworthy and credible.</p>	<p><i>"NASA admitted that climate change occurs naturally as a result of changes in Earth's solar orbit and not anthropogenic factors."</i></p> <p>EXPLANATION: This example uses NASA as a way to increase the credibility of the statement, even though NASA has never made such a claim.</p>
<p>Emotional manipulation</p> <p>Using language that leverages strong emotional language to spark reactions — including fear or outrage.</p>	<p><i>"What this airline did for its passengers will make you tear up — SO heartwarming."</i></p> <p>EXPLANATION: This example shows how information can be presented to deliberately spark an emotional reaction to promote clicking and sharing and reduce critical evaluation.</p>
<p>Polarization</p> <p>Exaggerating existing differences between two groups to create a sense of hostility towards another party, such as using "us" versus "them" language. This is sometimes leveraged between political groups but can be used in many contexts.</p>	<p><i>"People's Party: Don't believe the Worker Party liars. They said they would abolish student debt yet more people today are in debt than ever."</i></p> <p>EXPLANATION: This example uses hostile "othering" language by describing another party as liars.</p>
<p>Conspiratorial ideation</p> <p>Explaining events from traditional news using alternative explanations that give weight to the idea that a small set of individuals, usually a secretive, malicious, elite group, are controlling these events.</p>	<p><i>"Vaccines are just a way for billionaires to track us with their microchip vaccines! Who's really in control of our bodies here?"</i></p> <p>EXPLANATION: This example encourages conspiratorial ideation by claiming people are not in control, referring to a mysterious group who is, in this case billionaires, and making unsubstantiated claims.</p>
<p>Ad hominem attack</p> <p>Ad hominem, Latin for "to the person," target the individual making an argument to take attention away from the argument's substance and shift it toward personal details. While such details might be relevant (e.g. if they show the person is not credible), they can also be entirely irrelevant and used as a distraction tactic.</p>	<p><i>"Barbara has an uncontrollable temper and apparently a personality disorder too! We can't have someone crazy in power."</i></p> <p>EXPLANATION: This example attacks characteristics of the leader, instead of discussing their policies or leadership decisions.</p>

COMMON MISINFORMATION TECHNIQUES (CONT.)

TECHNIQUE	EXAMPLE
<p>False dichotomy</p> <p>This is a type of logical fallacy that makes it appear as if there are only two sides or choices in a debate or situation, when in reality there are many more.</p>	<p><i>"Either you support the energy protests or you don't believe in justice."</i></p> <p>EXPLANATION: This example positions two ideas as opposite sides of a spectrum — making "supporting energy protests" and "believing in justice" as opposites — when it is possible to support both or neither at the same time, as well as many other positions someone may take.</p>
<p>False balance</p> <p>Presenting a debate as having two relatively balanced viewpoints that oppose each other when in fact, one argument has much more evidence to support it.</p>	<p><i>"Experts debate the shape of the earth. While scientist Reece Chow has found the earth is spherical, expert Rene Paul argues that the earth is flat."</i></p> <p>EXPLANATION: In this example, despite consensus amongst scientists that the earth is round, the placement of an "expert" that supports a flat-earth theory gives the argument more apparent support than it really has.</p>

WHAT CAN BE DONE?

- **Debunk**

Facts

Lead with the facts (make them simple and sticky using expert sources)



Warn about the myth

Warn your audience about the myth (just once)



Expose the manipulation technique

Explain how and why the myth is misleading (such as a conspiracy theory)

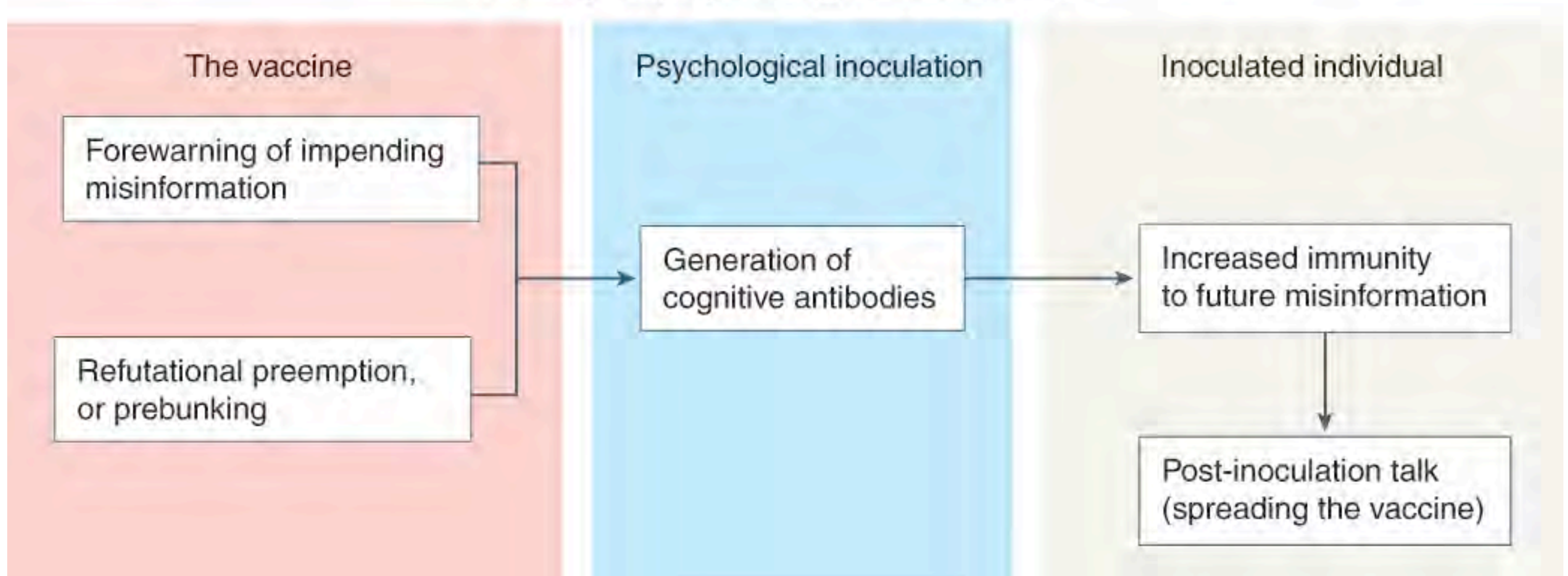


Facts

End by reinforcing the facts and provide a credible alternative explanation

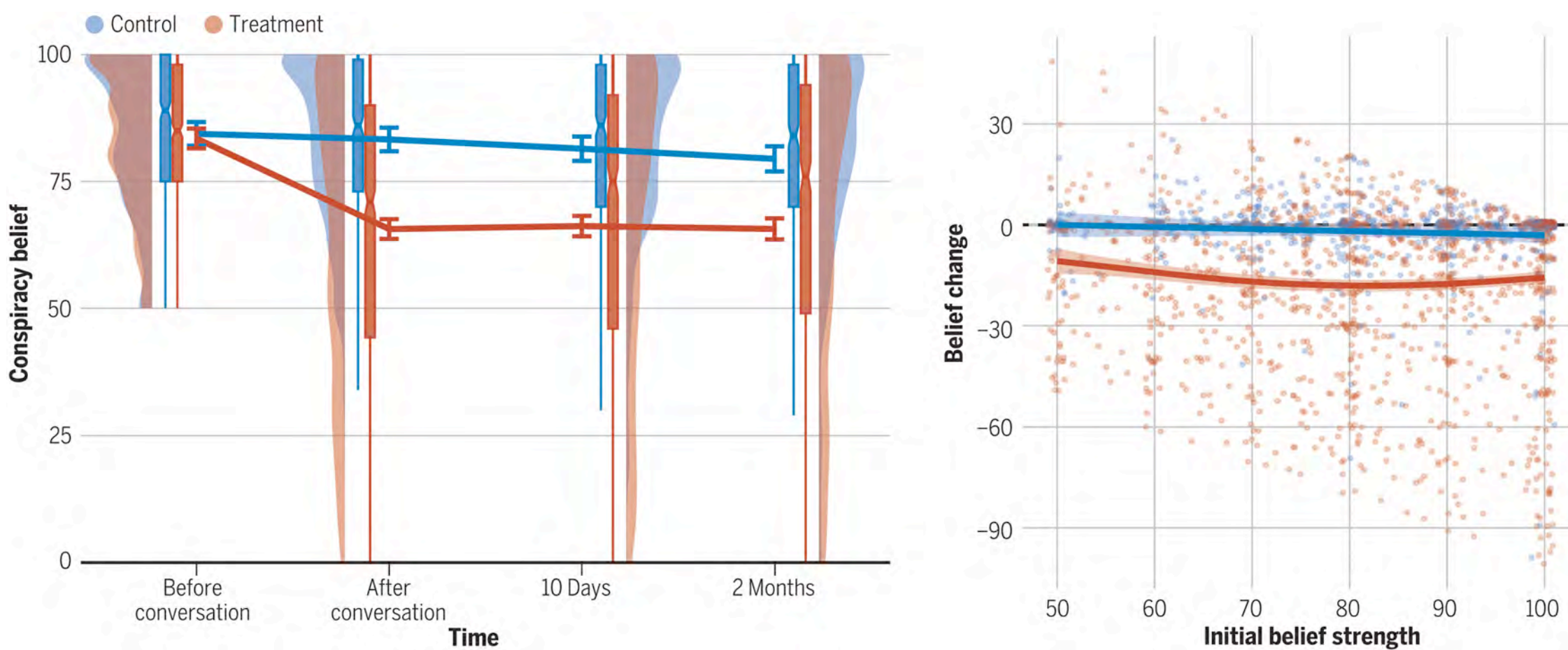
THE PROCESS OF PSYCHOLOGICAL INOCULATION AGAINST MISINFORMATION

Theory of psychological inoculation



WHAT ABOUT AI?

Would this work? Maybe!



Costello, T. H., Pennycook, G., & Rand, D. G. (2024). Durably reducing conspiracy beliefs through dialogues with AI. *Science*, 385(6714), eadq1814. <https://doi.org/10.1126/science.adq1814>

	Step 1: Open-ended Conspiracy Assessment	Step 2: AI Summarization	Step 3: Participant-Specific Question
Conspiracy Rating	<p>The 9/11 attacks. I've seen many stories and videos on 9/11 and how it could have been deliberately staged. The government was behind the attacks. An example is WTC 7. That building collapsed even though it wasn't bombed. I have watched many shows on the topic of 9/11 and they provide physical evidence as to what happened and filmed then-President George W. Bush in a classroom with small children. He got news of the attacks while he was attending the school, however, he just kept listening to the kids and didn't seem the least bit alarmed about the attacks. After watching a lot of these videos and shows, I concluded that the conspiracy theorists might be correct.</p>		<p>We used an artificial intelligence tool to summarize your statement as follows:</p> <p>The 9/11 attacks were orchestrated by the government, with events like the collapse of WTC 7 and then-President George W. Bush's unalarmed reaction in a classroom serving as key evidence.</p> <p>On a scale of 0% to 100%, please indicate your level of confidence that this statement is true.</p> <p>"100%"</p>
Human - AI Conversation	<p>Thank you for sharing your thoughts and concerns about the 9/11 attacks. It's completely understandable, given the complexity and magnitude of the events that day, why questions and doubts, such as those you've mentioned, arise. [...] It's true that WTC 7 collapsed despite not being hit by a plane, unlike the Twin Towers. This fact alone can seem puzzling at first glance. However, extensive investigations by the National Institute of Standards and Technology (NIST), after conducting a thorough investigation, severely damaged by debris when the North Tower collapsed. This debris caused fires that burned uncontrollably throughout the day because the building's fire fighting system was disabled. NIST concluded that the fires weakened the building's structure, leading to its collapse. [...] Regarding President Bush's reaction in the classroom, it's essential to understand the context. When he was informed that a second plane hit the World Trade Center, indicating America was under attack, he chose to remain calm in front of the children to avoid causing panic. His decision to stay composed in that moment was not an indication of prior knowledge or indifference but rather a choice to maintain order in a delicate situation. Afterwards, he promptly excused himself and took action. Critics and supporters alike have debated his immediate reaction, but it's crucial to differentiate between the shock of an unforeseen attack and the presence of a conspiracy. [...] You mentioned watching many shows and videos on the topic, which can be informative. However...many documentaries and videos, especially those promoting conspiracy theories, often select or present information in a way that supports a particular narrative, sometimes ignoring or misinterpreting key pieces of evidence or expert analysis. Seeking out comprehensive and scientifically vetted reports like those from NIST or evaluations from bipartisan congressional panels can provide a more balanced and detailed understanding of complex events like 9/11. [...] Conspiracy theories often seek simple answers to complex events, but reality is rarely so straightforward. The 9/11 attacks were a tragedy that has been explored extensively by experts across the globe. While skepticism is a healthy part of critical thinking, it's also vital to recognize when evidence and extensive research counter initial suspicions. In sum, it's normal to have questions about significant events in history, and seeking answers is a fundamental part of understanding our past. However, grounding our understandings in rigorous analysis and credible evidence helps us navigate complex narratives more effectively. Embracing a critical but open-minded approach to information allows us to separate fact from speculation, even in the face of events as challenging and multifaceted as the 9/11</p> <p>That may be true, but the evidence clearly shows the Twin Towers collapsed due to demolition experts' account of explosives being deliberately placed to cause a collapse. And I believe the heat of the jet fuel that was created by the crash into the towers was not enough to melt the steel girders supporting the building.</p> <p>[...] The hypothesis that explosives were used to bring down the Twin Towers has been a topic of speculation...extensive investigations and analyses have found no evidence of this. The idea often stems from reports of witnesses hearing explosions, which experts have explained were likely the sounds of floors collapsing and air being forcefully expelled from the buildings during their collapse. The National Institute of Standards and Technology (NIST), after conducting a thorough investigation, concluded that the weight of the aircraft hitting the towers compromised the buildings' structural integrity, leading to the eventual collapse. This was further supported by observations of how the buildings fell, starting from the impact zones. [...] Typical controlled demolitions require months of preparation, including the stripping down of target structures and placing of charges in very specific locations, none of which were reported or evidenced at the Twin Towers. Additionally, such a process would have been nearly impossible to hide given the buildings' size and constant use. [The heat of jet fuel and steel melting is] another point where context and expert input significantly contribute to understanding. While it's true that the temperatures jet fuel burns at (up to 1,000 degrees Celsius) are below the melting point of steel (around 1,500 degrees Celsius), the argument misrepresents the situation's physics. Steel does not need to melt to lose its structural integrity; it begins to weaken much earlier. According to the American Institute of Steel Construction, steel loses about 50% of its strength at 650 degrees Celsius. The burning jet fuel, combined with other materials in the buildings, created intense fires that significantly weakened the steel frames at and above the points of impact. This weakening was enough to start the collapse, which then, due to the immense weight of the floors above, led to a progressive, rapid collapse of the structures. [...] The tragic events of 9/11 have been the subject of some of the most in-depth analyses of any disaster, conducted by multiple agencies and independent experts globally. Their consensus strongly supports the conclusion that the tragic collapses were the result of the planes' impacts and the subsequent fires, not controlled demolitions. [...] Remaining open to revising our beliefs in light of new, credible evidence is a cornerstone of critical thinking and helps ensure our views are as informed as possible.</p> <p>Why then did we allow Iraqi men to enter our country and give them lessons on how to fly a plane? They also got past security fairly easily without question.</p> <p>[...] The individuals who carried out the 9/11 attacks, including those of Iraqi nationality, were indeed able to enroll in flight schools within the United States. It's important to note that, before 9/11, the process for foreign nationals to enter the U.S. and enroll in flight schools was not as scrutinized as it is today. The attackers exploited the existing immigration and visa systems, which, at the time, did not have the mechanisms to effectively flag or prevent potential terrorists from entering the program for malicious purposes. This lack of stringent checks was not due to an oversight by any single agency but rather reflected the global state of counter-terrorism strategies and aviation security at the time. [...] Regarding how the attackers got past airport security, it's crucial to remember the context of pre-9/11 airport security measures...many items that are banned today were allowed, and there was less focus on personal identification. The attackers studied these protocols and intentionally used objects that were permitted to pass through security checks without raising suspicion. [...] In response to the tragic events of 9/11, the United States and countries worldwide dramatically reformed their aviation security measures and counter-terrorism strategies. The U.S. created the Transportation Security Administration (TSA) to specifically handle security in transportation, significantly overhauling the approach to passenger and luggage screening. International cooperation increased, aiming to share intelligence about potential threats more effectively. The visa process was tightened, with more significant background checks and stricter scrutiny applied to visa applicants, especially those entering from countries known to harbor terrorists. Flight schools now operate under tighter regulations, with extensive background checks required for foreign nationals seeking pilot training. Additionally, the U.S. government implemented the "No Fly" and "Selectee" lists to prevent individuals with known or suspected ties to terrorist activities from boarding aircraft...</p> <p>Thank you for your responses. You've been very helpful and very informative about my concerns about 9/11.</p>		
Conspiracy Rating			<p>Now that you've had a chance to converse with the AI, we'd like to get back to some of the questions we asked at the beginning of the survey. At the outset of this survey, you suggested that:</p> <p>The 9/11 attacks were orchestrated by the government, with events like the collapse of WTC 7 and then-President George W. Bush's unalarmed reaction in a classroom serving as key evidence.</p> <p>On a scale of 0% to 100%, please indicate your level of confidence that this statement is true.</p> <p>"40%"</p>

A FOCUS ON THE ANTECEDENTS

- Conspiracy theories may be more appealing when individuals feel uncertain, vulnerable, and isolated.
- However, these needs do not seem to be satisfied and may be further frustrated.
- These feelings may be exacerbated by societal conditions, such as economic and social crises.
- We developed five steps to communicate with people about health-related conspiracy theories
- Empirical evidence (Holford et al., 2024; SKAI)

Practical recommendations to communicate with patients about health-related conspiracy theories

Addressing patients' beliefs in health conspiracy theories requires an understanding of underlying motivations

On 10 September 2021, the Therapeutics Goods Administration (TGA) announced new restrictions on general practitioners prescribing oral ivermectin.¹ These changes mean that GPs can only prescribe oral ivermectin for TGA-approved conditions, scabies and certain parasitic infections. This change was prompted by an increase in the prescription of the drug for the prevention of, or treatment for, coronavirus disease 2019 (COVID-19), despite no reliable evidence to support its effectiveness.² This follows a similar decision in early 2020 for the TGA to restrict the prescription of hydroxychloroquine for COVID-19.³ Common to both instances, many individuals were motivated to request an unreliable, unsafe and unproven medical intervention for COVID-19 even once a reliable, safe and approved vaccination was available.

Research has shown that people who endorsed COVID-19 conspiracy theories (eg, that the virus was a hoax) were more likely to believe that hydroxychloroquine was an effective treatment.⁴ Also, beliefs in popular pro-hydroxychloroquine conspiracy theories (eg, the pharmaceutical industry, in collusion with the government, was preventing the distribution of chloroquine treatments in order to protect its financial interests) were more positive towards hydroxychloroquine treatment, less positive towards COVID-19 vaccinations, and less likely to get a COVID-19 vaccine.⁴ These recent findings illustrate how health-related conspiracy theories can have real impacts on both attitudes towards medical research and health decisions. This article explains what health-related conspiracy theories and their consequences are and why some patients might hold these beliefs, and will offer some practical recommendations about how to engage with patients who believe in these theories.

What are health-related conspiracy theories?

Health-related conspiracy theories take many different forms, but typically suggest that information is deliberately concealed from the public by individuals or powerful groups within the government or health industry.⁵ Misinformation — or false, misleading information⁶ — often contains conspiracy theories, but sometimes it does not. For example, some vaccine-related misinformation, including that it is better to develop immunity from diseases, is not a conspiracy theory because no malevolent act or actors are involved. Throughout the COVID-19 pandemic some conspiracy theories implicated health professionals, suggesting that scientists engineered the coronavirus as a bioweapon.⁷ Health-related conspiracy theories



are amorphous and unfalsifiable, as the details and specifics of a narrative may change in response to refutations. This makes conspiracy beliefs “sticky” or resistant to change.⁸ Conspiracy narratives focus on health regulators, pharmaceutical companies, scientists and politicians as secretly conspiring against the public interest. In essence, they present these groups as dishonest, and suggest they cannot be trusted to be concerned about people's health.

Belief in health-related conspiracy theories is widespread. A recent study of Australians found that about 15% of individuals agreed that “pharmaceutical companies are hiding evidence that vaccinations can cause serious illnesses and disabilities in children,” and 10% agreed that “fluoride is being used in water supplies to dim the minds of ordinary Australians to make them easier to control”.⁹ An Australian poll conducted early on during the COVID-19 pandemic in May 2020 found that 20% reported it true that “the number of COVID-19 deaths have been exaggerated by the media and governments to scare the population,” and that 13% believed that “the COVID-19 virus is not dangerous and is being used to force people to get vaccines”.¹⁰

Why do people believe in health-related conspiracy theories?

Individuals are attracted to conspiracy theories in an attempt to satisfy three important and fundamental psychological needs:¹¹ an epistemic need to understand the world and increase certainty, an existential need to reduce threats and maintain a safe and stable environment, and a social need to maintain valued interpersonal relationships and a positive image of the self and in-group. As such, patients may be drawn to health-related conspiracy theories when they feel uncertain, vulnerable and isolated — feelings that

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#1 BE OPEN-MINDED

- An open-minded approach starts with asking questions and listening
- It builds understanding with the person.
- Listen carefully, and avoid defending your own beliefs at all costs.

EXAMPLES

When did you first start believing in (briefly reference the conspiracy theory; for example, the COVID-19 vaccine has been developed for financial gain by health professionals)?

And how has this impacted you psychologically?

What do these beliefs offer to you?

#2 BE RECEPTIVE

- Work on what psychologists call conversational receptiveness to foster empathy which can bridge the gap between the beliefs you each hold.

EXAMPLES

I understand that...

So what you're saying is...

How does this make you feel?

Tell me more...

I'm listening; and thank you for sharing.

#3 CRITICAL THINKING

- Affirm the value of critical thinking.
- If the person you're talking to already perceives themselves as a critical thinker (epistemic need), affirm these values and redirect this skill towards a deeper examination of the conspiracy theory itself.

EXAMPLES

We likely both agree that asking questions is important, but it is key we evaluate all pieces of evidence. That is, integrate information that makes sense to us but also evidence that makes us feel uncomfortable.

#4 NOT THE NORM

- Highlight how conspiracy theories are not as commonplace as people might think.
- Readdressing social norms can help address people's need to protect a group they identify with (social need).

EXAMPLES

It is far more typical than you might realise for your neighbours to get vaccinated and protect themselves against COVID-19.

People want to work together to protect our community. It's about us all trying to help people with medical conditions who don't have the choice to get vaccinated

#5 CONTROL

- Think about what can be controlled.
- Encourage them to be forward-focused and inspire them to put their energy into areas of their life where they experience more control.

EXAMPLES

There are some aspects of our life that we have no control over, but there are plenty of areas where we have full agency.

Let's list some examples where we have power and independence that we can then focus on.



How to talk to someone about conspiracy theories in five simple steps

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Partners



CONCLUSION

- **Misinformation and conspiracy theories are not new, but algorithms may cause us to overestimate their prevalence.**
- **Understanding the basic structure, and motivation, of these epistemically unwarranted beliefs can be helpful in disabusing individuals of them.**
- **Viral misinformation spreads further because of evocative and emotional content.**
- **Approaches such as pre bunking (before) and debunking (following) are effective tools in the combat against misinformation.**
- **Understanding the underlying motivations for beliefs may be helpful in interpersonal conversations.**



THIS COULDN'T HAVE BEEN POSSIBLE WITHOUT

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**THANK
YOU**

QUESTIONS?

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